

SCO M2: Demonstrate an understanding of the imperial system by: describing the relationships of the units for length, area, volume, capacity, mass and temperature, [C, CN, ME, V]

#### ACHIEVEMENT INDICATORS

- Explain how the imperial system was developed.
- Identify commonly used units in the imperial system, and determine the relationships among the related units.
  - Identify contexts that involve the imperial system.
- Explain, using examples, how and why fractions are used in the imperial system.
- Write a given measurement expressed in one imperial unit in another imperial unit.

## The Imperial System

The Imperial System was developed over hundreds of years in the UK, then the French developed the Metric System in 1670, which soon spread through Europe. However, the USA and a few other countries still prefer feet and inches.

#### Examples of Imperial measures:

Length: inches, feet, yards

Area: square feet, acres

Weight: pounds, ounces

Volume: fluid ounces, gallons, pints, quarts

- In the imperial system, the base unit for measuring length is the foot and the base unit for measuring volume is the pint.

### Imperial Relationships

12 inches (in. or ") = 1 foot (ft. or ')

3 feet = 1 yard (yd.)

1760 yards = 1 mile (mi.)

5280 feet = 1 mile

### Mental Math Question

In 1995, while playing for the Mount Allison Mounties, Eric Lapointe ran the ball for 311 yards. How many feet is that?

$$1 \text{ yd} = 3 \text{ feet} = 36''$$

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### Imperial Conversions

- In order to solve an imperial measurement problem, you may have to convert the given measurements into common units. To convert from one imperial unit to another imperial unit, use a conversion factor.

- A conversion factor is a fraction with the numerator containing the units to which you want to convert. The denominator contains the original units in which the measurement was taken.

$$1 \text{ foot} = 12 \text{ inches}$$

$$\frac{1 \text{ foot}}{12 \text{ in.}} \text{ or } \frac{12 \text{ in}}{1 \text{ foot}}$$

**Example: How many inches is 6.5 feet (6.5')?**

Solution: We know that there is 12 inches in 1 foot. So...

$$6.5' \times \frac{12''}{1'} = 78''$$

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Imperial Conversion Exercise

1) 16 in. = \_\_\_\_\_ ft.

2) 2 mi. = \_\_\_\_\_ yd.

$$16 \cancel{\text{in}} \times \frac{1 \text{ ft}}{12 \cancel{\text{in}}} = 1.3 \text{ ft.}$$

$$2 \cancel{\text{mi}} \times \frac{1760 \text{ yd.}}{1 \cancel{\text{mi}}} = 3520 \text{ yd.}$$

3) 4 ft. = \_\_\_\_\_ in.

4) 2.5 ft. = \_\_\_\_\_ in.

5) 1200 yd. = \_\_\_\_\_ mi.

6) 56 in. = \_\_\_\_\_ ft.

7) 7 yd. = \_\_\_\_\_ ft.

8) 3520 yd. = \_\_\_\_\_ mi.

9) 24 ft. = \_\_\_\_\_ yd.

10) 1760 yd. = \_\_\_\_\_ in.